

What is claimed is:

- 1 1. An apparatus, comprising:
2 a first electronic device adapted to perform
3 a training phase with multiple second electronic devices to calculate
4 parameters to enable substantially simultaneous spatial division multiple access
5 transmissions to multiple ones of the multiple second electronic devices; and
6 a data phase by using the parameters to perform the spatial division multiple
7 access transmissions.
- 1 2. The apparatus of claim 1, wherein the first electronic device is further adapted to
2 perform an acknowledgement phase by using the parameters to perform substantially
3 simultaneous spatial division multiple access transmissions of acknowledgements to the
4 multiple ones of the second electronic devices subsequent to the data phase.
- 1 3. The apparatus of claim 1, wherein the first electronic device is further adapted to
2 perform the data phase by:
3 transmitting substantially simultaneous data polls to the multiple ones of the
4 multiple second electronic devices through multiple antennas; and
5 receiving substantially simultaneous data responses from the multiple ones of the
6 multiple second electronic devices through multiple antennas.

1 4. The apparatus of claim 1, wherein the first electronic device is further adapted to
2 perform the training phase by:
3 transmitting training polls to the multiple second electronic devices;
4 receiving training responses from the multiple second electronic devices through
5 multiple antennas;
6 processing the training responses received through the multiple antennas; and
7 calculating the parameters based on the processed training responses.

1 5. The apparatus of claim 1, wherein the parameters comprise beam forming
2 parameters.

1 6. The apparatus of claim 1, wherein the parameters are further to enable substantially
2 simultaneous spatial division multiple access receptions from the multiple ones of the
3 multiple second electronic devices.

1 7. The apparatus of claim 1, wherein the first electronic device further comprises at
2 least four antennas to communicate with the multiple second electronic devices during the
3 training phase and the data phase.

1 8. The apparatus of claim 7, wherein the first electronic device further comprises a
2 computing platform coupled to the at least four antennas.

1 9. The apparatus of claim 8, wherein the first electronic device further comprises at
2 least four modulator/demodulators with at least one modulator/demodulator coupled
3 between each of the at least four antennas and the computing platform.

1 10. The apparatus of claim 9, wherein the first electronic device further comprises
2 multiple analog-to-digital converters and multiple digital-to-analog converters with at least
3 one analog-to-digital converter and at least one digital-to-analog converter coupled
4 between each modulator/demodulator and the computing platform.

1 11. A method, comprising:
2 transmitting a training poll to a first mobile device;
3 receiving a training response from the first mobile device;
4 transmitting a training poll to a second mobile device;
5 receiving a training response from the second mobile device;
6 calculating parameters based on the received training response from the first mobile
7 device and the received training response from the second mobile device; and
8 using the parameters to enable spatial division multiple access transmissions to the
9 first and second mobile devices.

1 12. The method of claim 11, wherein said using comprises:
2 transmitting a first data poll to the first mobile device and a second data poll to the
3 second mobile device substantially simultaneously using spatial division multiple access
4 techniques; and

5 receiving a response to the first data poll from the first mobile device and a
6 response to the second data poll from the second mobile device substantially
7 simultaneously.

1 13. The method of claim 12, further comprising transmitting, subsequent to said
2 receiving, an acknowledgement to the first mobile device and an acknowledgement to the
3 second mobile device substantially simultaneously using the spatial division multiple
4 access techniques.

1 14. The method of claim 13, wherein said calculating the parameters comprises
2 calculating beam forming parameters.

1 15. The method of claim 13, wherein the parameters are further used to enable spatial
2 division multiple access receptions from the first and second mobile devices.

1 16. A machine-readable medium that provides instructions, which when executed by a
2 processing platform, cause said processing platform to perform operations comprising:
3 transmitting a training poll to a first device;
4 receiving a training response from the first device;
5 transmitting a training poll to a second device;
6 receiving a training response from the second device;
7 calculating parameters based on the received training response from the first
8 device and the received training response from the second device; and

9 using the parameters to enable substantially simultaneous transmissions to the first
10 and second devices using spatial division multiple access techniques.

1 17. The medium of claim 16, wherein said operations further comprise:

2 using the parameters to enable transmitting a data poll to the first device and a data
3 poll to the second device substantially simultaneously using the spatial division multiple
4 access techniques; and

5 using the parameters to enable receiving a data response from the first device and a
6 data response from the second device substantially simultaneously using the spatial
7 division multiple access techniques.

1 18. The medium of claim 17, wherein said operations further comprise using the
2 parameters to enable transmitting an acknowledgement to the first device and an
3 acknowledgement to the second device substantially simultaneously using the spatial
4 division multiple access techniques.

1 19. The medium of claim 16, further comprising using the parameters to enable
2 substantially simultaneous receptions from the first and second devices using the spatial
3 division multiple access techniques.